Amendments to the Specification:

Please replace page 2, lines 14-21 with the following paragraph:

These needs and others may be met by the present invention, an example of which is a directed light source for efficient light emission. The light source has a planar substrate having a ~~top~~ front surface and an opposite back ~~bottom~~ surface. A light emitting device is located on the ~~top~~ front surface of the planar substrate. A clear reflector has a back surface facing the ~~top~~ front surface of the planar substrate and a semi-cylindrical front surface. The reflector includes a reflecting top surface and an opposite and quadrilaterally symmetrical reflecting bottom surface. The reflector causes light from the light emitting device to be directed out from the cylindrical front surface at a predefined angle.

Please replace page 5, lines 10-19 with the following paragraph:

FIG. 1 shows a lighting device 10 which is one example of the present invention. The lighting device 10 is centered around an LED 12 which is any semi-conductor, solid state light source such as a flat LED. The LED 12 will preferably have a lambertian distribution for the widest angle distribution of light. The LED 12 is coupled to a power source via two electrical leads 14 and 16. The LED 12 is affixed to a planar substrate 18. The planar substrate 18 is typically made from a highly thermally conductive material such as aluminum. The planar substrate 18 has a back~~ing~~ surface ~~20~~ with an opposite planar ~~semi-cylindrical~~ front surface ~~22~~. Of course other curved shapes may be used. A reflector 24 which is fabricated from a clear material such as PMMA, acrylic ~~plexglass~~, glass or plastic is mounted on the front surface ~~22~~ of the substrate.

Please replace page 6, lines 4-14 with the following paragraph:

Of course, multiple LEDs may be affixed to the planar substrate 18 behind ~~below~~ the reflector 24 in order to increase light output if desired. The LED 12 in this embodiment is a Luxeon LED available from Lumileds. Alternatively, the LED 12 may be a pre-packaged part such as a surface mount (SMT) or a though hole package, or an LED chip mounted directly to the substrate (chip on board, COB). The wavelength of the light is controlled by the material properties such as doping level and energy gap or by a florescing ~~florescencing~~ overcoat on the LED 12. Of course conventional light sources may be used such as tungsten halogen and incandescent bulbs with the appropriate modifications to the reflector 24. The LED 12 includes an LED die 29 and a body or base 30 ~~which is mounted on a reflective cup 30 which is formed on the substrate 18 to increase the beam intensity. The reflective cup 30 may be fabricated from any material with a specular finish~~.

Please replace page 7, lines 8-11 with the following:

In applications such as a tail light with a wide beam pattern, it is desirable to form facets on the surfaces 38 and 40. The facets are typically comprised of concentric and/or planar ~~planer~~ facets with respect to the LED 12. The facets are then formed on the surfaces 38 and 40 by breaking the surfaces 38 and 40 into ~~in to~~ planar or curved segments.

Please replace page 7, lines 12-17 with the following:

The reflector 24 has an opposite back ~~backing~~ surface 42. The back ~~backing~~ surface 42 has a pair of tabs 44 and 46. The tabs 44 and 46 provide mounting areas to the substrate 18. The tabs 44 and 46 have mounting holes 48, 50, 52 and 54 that may be used to hold fasteners such as screws or rivets to fix the reflector 24 to the substrate 18 in proper alignment with the LED 12. Of course other means may be used to couple the reflector 24 and the substrate 18.

Please replace page 7, line 18 – page 8, line 2 with the following:

The reflector 24 also has an indentation 56 on the back surface 42 which is fitted to the substrate 18. The indentation 56 has a pair of opposite semi-circular ~~cylindrical~~ top and bottom refractive surfaces 58 and 60 that are located around ~~a~~ lens 62 which covers the LED die 29 which further collects light from the LED die 29. The indentation 56 is of sufficient size to accommodate the LED 12 including the lens 62.

Please replace page 8, lines 3-17 with the following:

The reflector 24 is preferably fabricated from PMMA /acrylic ~~plexiglass~~, but any other clear material may be used such as glass. The reflector 24 is fabricated to employ quadrilateral symmetry as opposed to rotational symmetry. Thus the top reflective surface 38 ~~58~~ is defined by quadrants 70 and 72 while the bottom reflective surface 40 is defined by quadrants 74 and 76. The quadrilateral symmetry makes each quadrant 70, 72, 74 and 76 of the reflector 24 a mirror/rotated image of itself. Thus, quadrants 70 and 72 are mirror images, while quadrants 74 and 76 are mirror images. This is the same symmetry present in a rectangle but, unlike a rectangle which is planarly shaped, the reflector 24 has a curvature in the form of the reflective surfaces 38 and 40. The curvature is dictated by the radiation pattern of the LED 12 so optimally all the light is collected and is typically emitted in a 180 degree angle arc about the LED 12. A parabolic ~~parabola~~ profile is selected for ~~the~~ shaping the quadrants 70, 72, 74 and 76 and the outer surface 32 is semi-cylindrical ~~shaped in a half torus~~. The foci ~~focus~~ of the quadrants 70, 72, 74 and 76 are preferably located at the focal smear of the LED 12. The refractive index of the material of the reflector 24 also influences the location of the focal smear of the LED 12.

Please replace page 8, line 18 – page 9, line 3 with the following:

The indentation 56 allows light rays from the LED 12 to be emitted through the reflector 24 at perpendicular angles to the surface 32. This allows the light rays to be refracted from the surfaces 58 and 60 with little or not change in angle. Alternatively and as shown in Fig. 2, the indentation 56 may be made with a straight wall to allow the light to refract at the media surface. The refraction is governed by Snell's law of refraction and thus the refraction at the surfaces of the indentation 56 changes the angle of the light and thus the location of the focal smear.

Please replace page 9, lines 4-8 with the following:

Furthermore and with reference to figs. 3, 4 and 5, with a TIR based reflector the lens 57 ~~62~~ is added to indentation 56 to refract the light that is not collected by the TIR surfaces 38 and 40 of the reflector 24. The lens 57 ~~62~~ may have either or a combination of the following surfaces: flat, convex, fresnel or concave that helps meet a beam distribution or lighting effect. In this example the lens 57 ~~62~~ is a convex internal lens allowing for a greater collection of light.

Please replace page 9, lines 9-18 with the following:

In operation the shape of the reflector 24 allows the light from the LED 12 to be emitted in a horizontal plane from the front surface 32. Light that is emitted in the vertical plane at angles greater than the desired emission angle in the horizontal plane, is reflected outward ~~back~~ by the reflective surfaces 38 and 40. FIG. 5 is a cross section of the reflector 24 which shows light rays emitting from the LED 12. A series of light rays 80 are refracted by the upper refractive surface 58 and reflected by the top surface 38 to be emitted in a focused plane. A series of light rays 82 are refracted by the lower refractive surface 60 and reflected by the bottom

surface 40 to be emitted in a focused plane. A series of light rays 84 which miss the reflective surfaces 38 and 40 are focused by the lens 62.

Please replace page 10, lines 16-19 with the following:

The reflector 100 also has a ~~an~~ cavity ~~indentation~~ 140 ~~138~~ on the back surface 104 which is rectangular in shape. ~~The indentation 138 forms a flat surface 140 which has a semi-cylindrical cavity 142 for the light device such as the LED 12. The cavity 142 follows the rotational symmetry of the outer surface 102.~~

Please replace page 10, line 20 – page 11, line 2 with the following:

Furthermore, the TIR based reflector surfaces 128 and 130 allow a lens ~~144~~ to be added to refract the light that is not collected by the TIR surfaces 128 and 130 of the reflector 100. ~~The lens 144 can have a number of different surfaces that help meet a beam distribution or lighting effect. In this example the lens 144 is cylindrical.~~

Please replace page 11, lines 3-14 with the following:

As with the above example, the shape of the reflector 100 and the quadrilateral symmetry allows the light from a light source in the cavity 140 ~~138~~ to be emitted in a horizontal plane from the outer surface 102. The cylindrical toroidal lens 110 assists in collimating the light and focusing the intensity in the horizontal plane at a specific emission angle. Light which is emitted in the vertical plane at angles greater than the desired emission angle in the horizontal plane is reflected outward ~~back~~ by the reflective surfaces 128 and 130. As explained above, the reflector 100 has quadrilateral symmetry for the reflective surfaces 128 and 130 which are divided into quadrants 150, 152, 154 and 156. The quadrants 150, 152, 154 and 156 of the reflector 100 are a

mirror/rotated image of themselves. The curvature of the reflective surfaces 128 and 130 is dictated by the radiation pattern of the intended light source so optimally all the light is collected and is typically a 180 degree ~~angle~~ arc about the light source.

Please replace page 11, line 19 – page 12, line 6 with the following:

FIGs. 9-10 show ~~shows~~ a masthead antenna light 200 which incorporates multiple light modules as explained above. The masthead antenna light 200 is intended to emit powerful beams of light in certain specified angles to mark the position of an antenna masthead for aircraft or ships. The antenna masthead light 200 has a circular base support 202 which is mountable atop an antenna masthead. The circular base support 202 has a flat mounting surface 204 which supports a pair of side structures 206 and 208 and an opposite pair of side structures 210 and 212. A front structure 214 is also mounted on the flat mounting surface 204. The side structures 206, 208, 210 and 212 are identical to each other.